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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/075,947 | 02/13/2002 | Nai-Kong V. Cheung | MSK-P-013-2 | 9846 |
| 21121 | 7590 | 04/06/2005 | EXAMINER | |
| OPPEDAHL AND LARSON LLP P O BOX 5068 DILLON, CO 80435-5068 | | | HELMs, LARRY RONALD | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1642 | |

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,947

Applicant(s)

CHEUNG ET AL.

Examiner

Larry R. Helms

Art Unit

1642

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11, 23 and 29-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11 and 38-41 is/are rejected.
- 7) ☒ Claim(s) 23, 29-37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claim 41 has been amended.

Claims 11, 23, 29-41 are pending and under examination.

2. The text of those sections of Title 35 U.S.C. code not included in this office action can be found in a prior Office Action.

Specification

3. The disclosure is still objected to because of the following informalities:

A. The title of the invention is not descriptive of the invention to T cells. A new title is required that is clearly indicative of the invention to which the claims are directed.

Appropriate correction is required.

Rejections Withdrawn

4. The rejection of claim 41 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn in view of the amendments to the claims.

Response to Arguments

5. The rejection of claims 11, 38-41 under 35 U.S.C. 103(a) as being unpatentable over Eshhar et al (US Patent 5,912,172, with priority to at least 4/90) and further in view of Bernhard et al (Int. J. Cancer 55:465-470, 1993) and Hansen (US Patent 5,851,527, with priority to 4/88) and Epenetos et al (US Patent 5,973,116, priority to 1/93) is maintained.

The response filed 2/4/05 has been carefully considered but is deemed not to be persuasive. The response states that "obvious-to-try" is not the standard and the examiner has picked out Bernhard from the myriad of papers describing tumor antigens (see page 5 of response) and Bernhard at most offers the identification of GD2 as a marker with therapeutic potential and Bernhard is done in vitro and Eshar expresses the scFv on a cell and the references are not combinable (see page 6 of response). In response to this argument, Eshhar specifically teaches a scFv on a T cell to target tumor cells and Bernhard specifically teaches a bispecific antibody that targets T cells and tumor cells. The reason for the bispecific antibody is to target T cells to the tumor cells. Eshhar's T cell is used to target the T cells to the tumor cells. Therefore, both constructs are used for tumor cell targeting or targeting T cells to the tumor. Thus, the art of Bernhard is relevant and combinable because it would have been obvious to target GD2 on tumor cells as taught by Bernhard with the anti GD2 antibody and such a T cell would target the tumor cells. The purpose of both references are to target T cells to tumor cells and are thus combinable. The response further cites *In re Deuel* and it is not clear why because the claims to a specific sequence were not rejected. The

response further states that the rejection is contrary to the holding in *Duell* not once but twice since two new compositions must be determined and the combination results in a reduction in activity as compared to Bernhard as well as doubt as to whether GD2 would even be presented properly to produce a result in the Eshhar method (see page 7 of response0. In response to this it is unclear what the response to *Duel* has to do with the rejection or what the reduction in activity is from. One skill in the art would have a reasonable expectation that the anti-GD2 antibody would be presented because antibodies are similar structures and Eshhar teaches that the antibody was displayed and functional.

The response further states that the other two references are not relevant to the basic issue and the reference is an extracellular preparation of the expressed protein and there is no teachings in the references of T cells expressing these materials (see page 7 of response). In response to this argument, the references show antibody conjugates for producing immunotoxins and multimerization and it would have been obvious to use a toxin conjugated a scFv to target the tumor cells with the T cell because toxin conjugates were routinely used in the art of cancer therapy. In addition, one would use a streptavidin conjugate because Epenetos et al teach construction of ScFv-streptavidin fusion results in "binding multivalently" as compared to the ScFv without the streptavidin fusion (see column 26, lines 23-38). Thus, it would have been obvious to obtain the amino acid sequence of the anti-GD2 antibody of Bernhard et al from the hybridoma, which obviously Bernhard was in position because they produced the monoclonal antibody, and express the single-chain antibody of Bernhard et al in a T

cell as described by Eshhar to target tumor cells and add a toxin or drug converting enzyme or streptavidin because Hansen or Epenetos et al teach conjugation of these molecules for diagnosis, treatment, or increased avidity.

Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Conclusions

6. Claims 23, 29-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larry R. Helms, Ph.D, whose telephone number is (571) 272-0832. The examiner can normally be reached on Monday through Friday from 6:30 am to 4:00 pm, with alternate Fridays off. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffery Siew, can be reached at (571) 272-0787.

9. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Fax Center telephone number is 703-872-9306.

Larry R. Helms

571-272-0832



LARRY R. HELMS, PH.D
PRIMARY EXAMINER